

## ABSTRACT

Methods for preparing a polymer-based stent assembly comprising an inflatable balloon catheter and a polymer-based stent resistant to relaxation-related negative recoil are provided. The methods comprise heating a polymeric cylindrical device which is at a final predetermined shape and diameter to a temperature sufficiently above the glass transition temperature ( $T_g$ ) of the polymer and for a time sufficient to erase any memory of previous processing of the polymeric cylindrical device and then quenching the polymeric cylindrical device to provide an educated polymeric cylindrical device having a memory of the final predetermined diameter and shape, mounting the educated cylindrical device on an inflatable balloon catheter, reducing the diameter of the educated cylindrical device by heating to a temperature at or slightly above the  $T_g$  of the polymer while evenly applying pressure on the exterior surface of the wall of the cylindrical device, and then cooling the cylindrical device below the  $T_g$  of the polymer to provide a stent assembly comprising an inflatable balloon catheter and an expandable, educated, polymeric stent snugly and stably disposed thereon. Assemblies comprising an inflatable balloon and a polymer based stent that is substantially resistant to relaxation related recoil mounted snugly on the balloon are also provided.